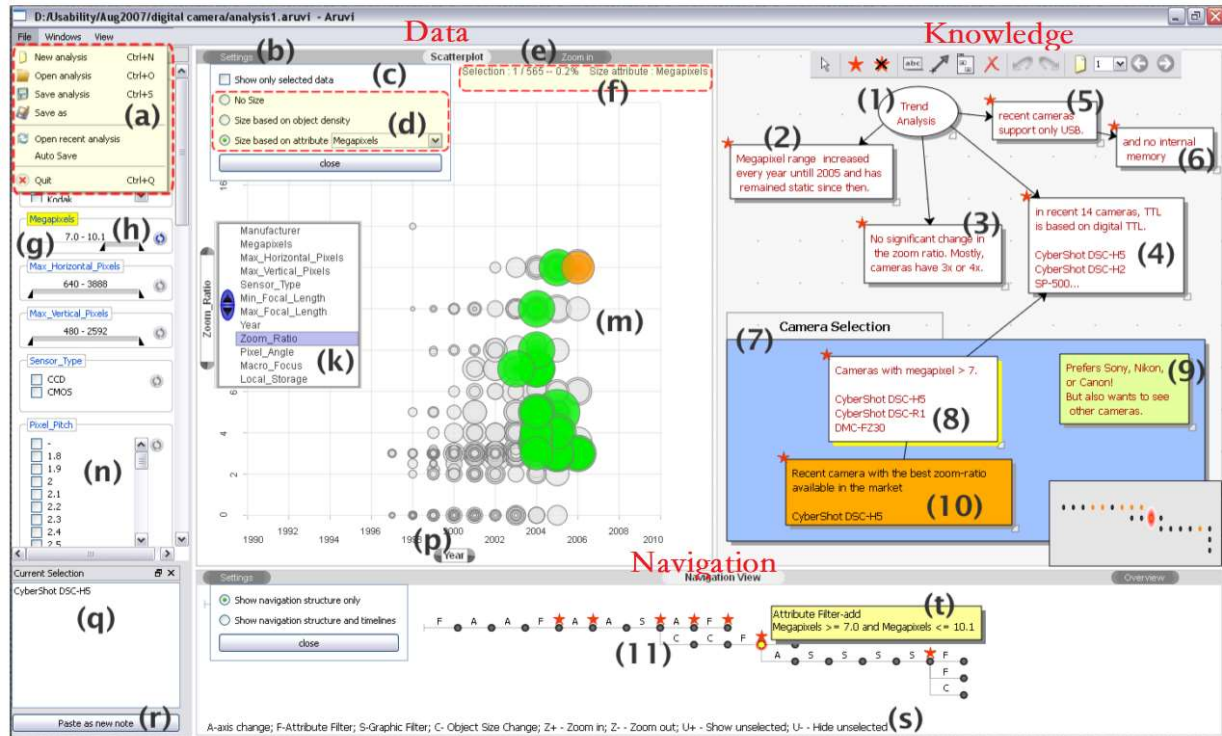


Brief Summary of visual representations and contributions(Provenance/Storytelling papers)

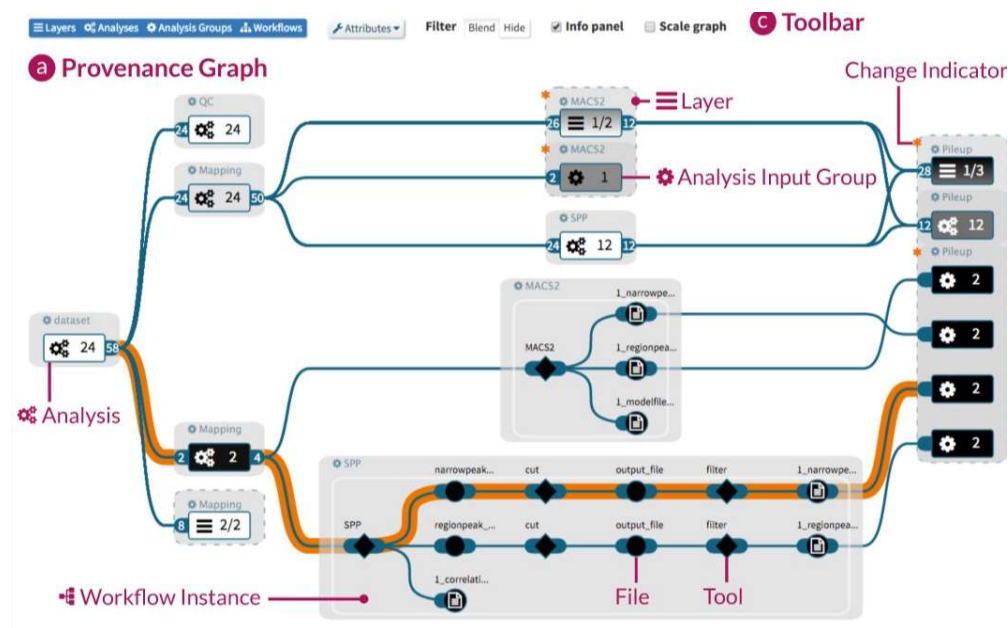
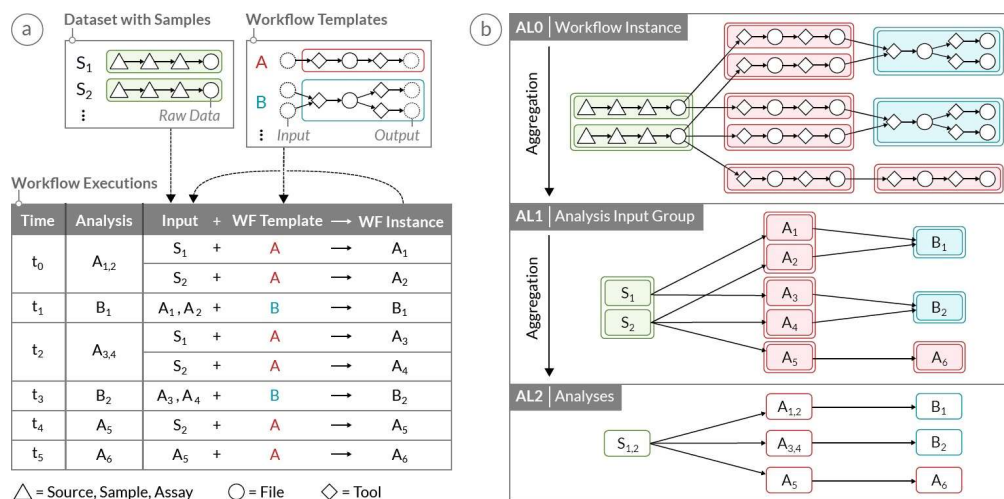
CHI08 Supporting the Analytical Reasoning Process in Information Visualization



- key feature: allows the user to establish a link between the externalized knowledge artifact in the knowledge view and a particular visualization state asynchronously.
 - Data view: visual representation(s) of the data;
 - Navigation view: visual representation(s) of the exploration process;
 - Knowledge view: visual representation(s) of the analysis artifacts and their causal links

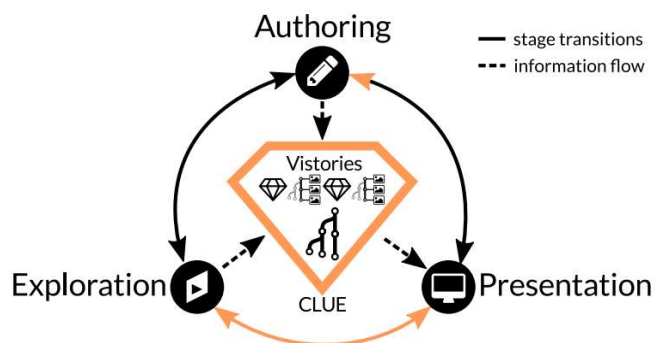
EuroVis16 AVOCADO: Visualization of Workflow-Derived Data Provenance for Reproducible Biomedical Research

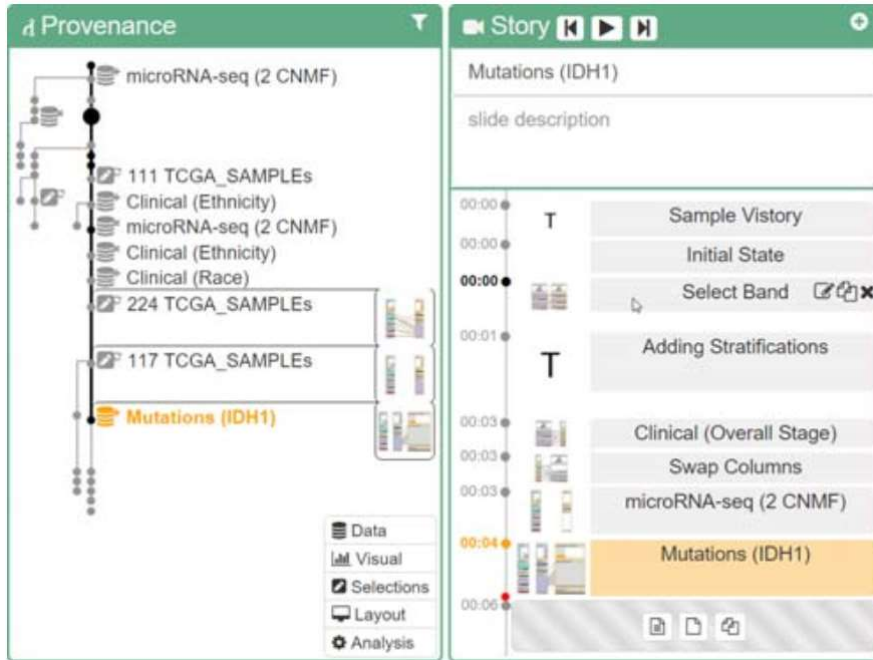
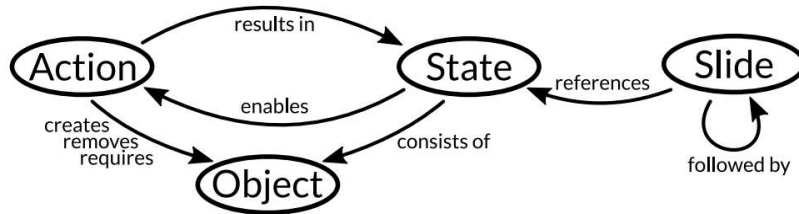
- Another paper about workflow (Graph) simplification thru aggregation
- Aggregation as well as Expansion



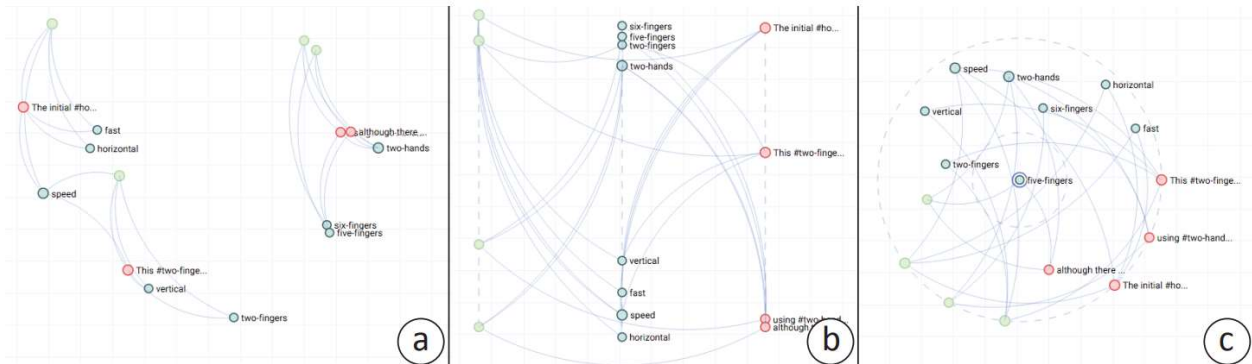
EuroVis 16 From Visual Exploration to Storytelling and Back Again

- CLUE, a model for reproducing, annotating, and presenting visualization-driven data exploration based on automatically captured provenance data
- The provenance graph data structure used in CLUE consists of four node types: state, action, object, and slide



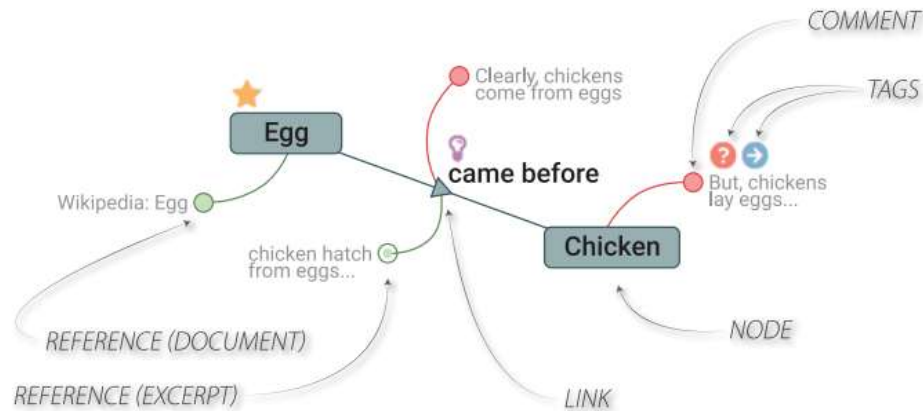


VIS16 Annotation Graphs: A Graph-Based Visualization for Meta-Analysis of Data based on User-Authorred Annotations



- Records user annotation (selection, tag, comment) | **operation**
- Generates a graph
 - node: annotation
 - edge: similarity > threshold
 - Different layouts

VIS17 Supporting Handoff in Asynchronous Collaborative Sensemaking Using Knowledge-Transfer Graphs



- Records users extracted data, thoughts, and user operation states | **operation**
- Graph
 - Node: concept/entities in documents
 - Edge: relationships
 - Comment, tag, references
- Interactive Timeline, captures and shows all graph operations, including
 - creating, deleting, and editing of nodes and links;
 - layout modifications;
 - attaching comments, tags, and references;
 - keyword search terms
- Collaborative sensemaking / asynchronous investigative document analysis task

VIS13 An Extensible Framework for Provenance in Human Terrain Visual Analytics

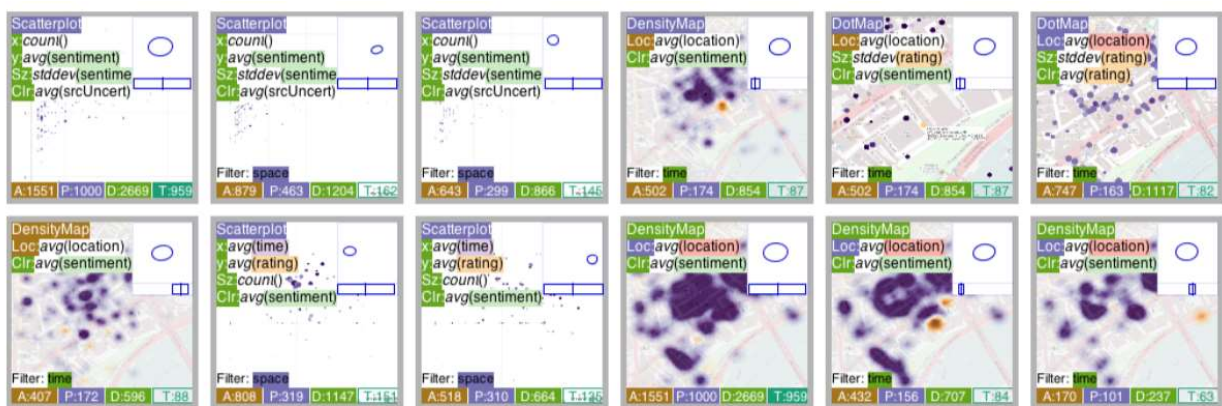


Fig. 1. Graphical summaries of bookmarks are used to record and browse the analytical process, here ordered (row-by-row) in the sequence in which they were bookmarked. Each can be used to access the live data, enabling analysts to revisit parts of the analytical process and helping verify past interpretations. A legend describing the encodings is provided in Fig. 6.

- System automatically captures *states* (an event or action takes place, i.e., everytime any aspect of the vis is changed or data filtered)
- Bookmarks (above fig.) are made by user, richer semantic information (user add), as well as some system recorded/computed information

CHI12 GraphTrail: Analyzing Large Multivariate, Heterogeneous Networks while Supporting Exploration History

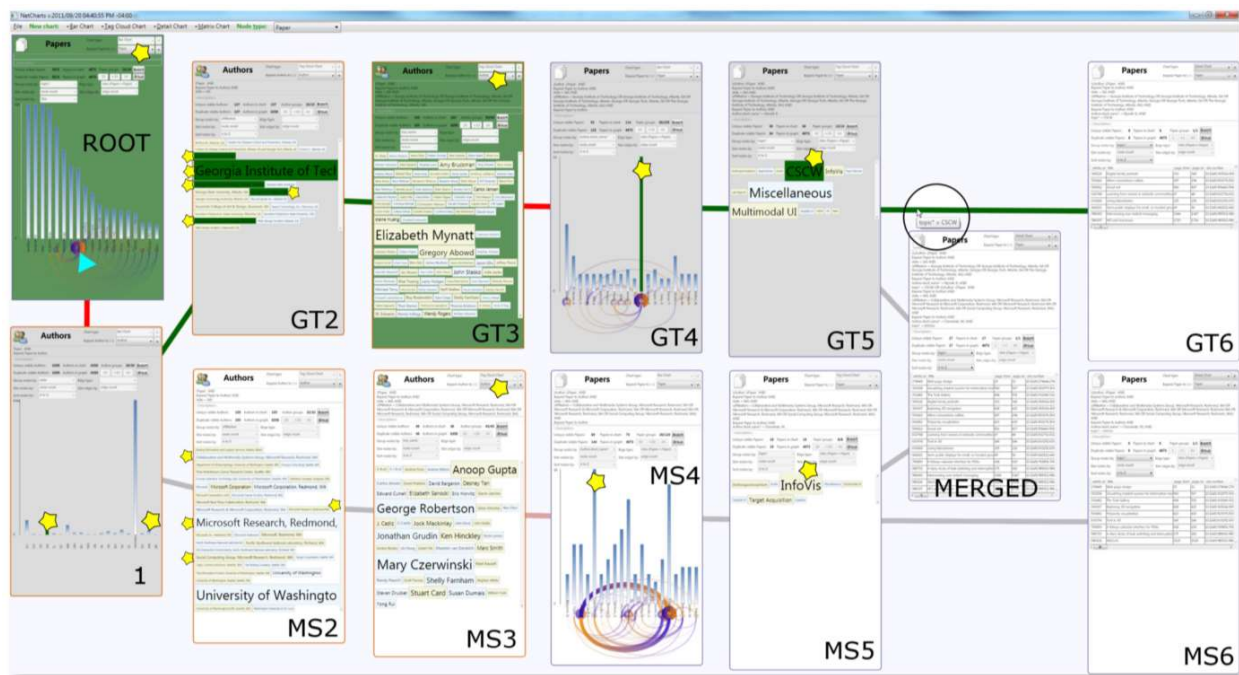
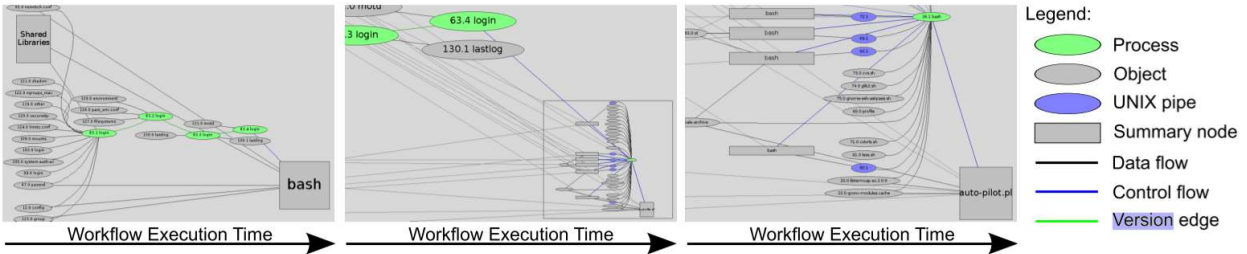


Figure 4. A GraphTrail analysis showing two parallel exploration paths, the top examining Georgia Tech (GT) patterns and the bottom comparing Microsoft Research (MS). They start at the ROOT chart that contains all the papers in the dataset. Charts in each path are numbered in order of creation (e.g., 1, GT2, GT3, ...), and the user interactions are shown with stars. The MERGED chart is the union of both branches' results. The user moved the mouse over the final parent link in the GT path (circled), highlighting the chain of actions up to the root.

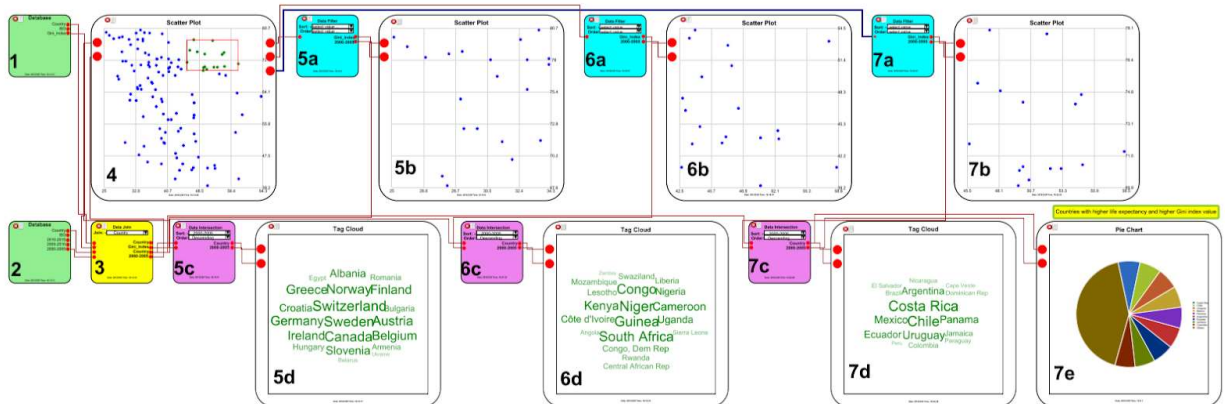
- Graph
 - Node: different charts defined by different data subsets
 - Link colors → different action types: filtering & merging, pivoting, cloning

Theory and Practice of Provenance (TaPP '11) Provenance Map Orbiter: Interactive Exploration of Large Provenance Graphs



- Using Graph summarization & semantic zoom (similar to *TensorFlow Graph Visualizer*) to help explore large graphs
- Graph
 - Node: process (os system), object, unix pipe | summary node
 - Edge: data flow, control flow, version edge

EuroVis13 ExPlates: Spatializing Interactive Analysis to Scaffold Visual Exploration



Flow-based, exploration plates:

- Plates (all with titles and timestamps)
 - Data plate: operation on data → data transformation
 - Visualization plate: data → visual representation
- Data anchors and Data Wires
 - Flow of data
- Visualizes the exploration process

SIGMOD06 VisTrails: Visualization meets Data Management

